

PROJECT BRIEFING

ACTING REGIONAL ADMINISTRATOR

Florida Phosphate Mine Initiative Region 4, Superfund Division

February 24, 2010



U.S. Environmental Protection Agency



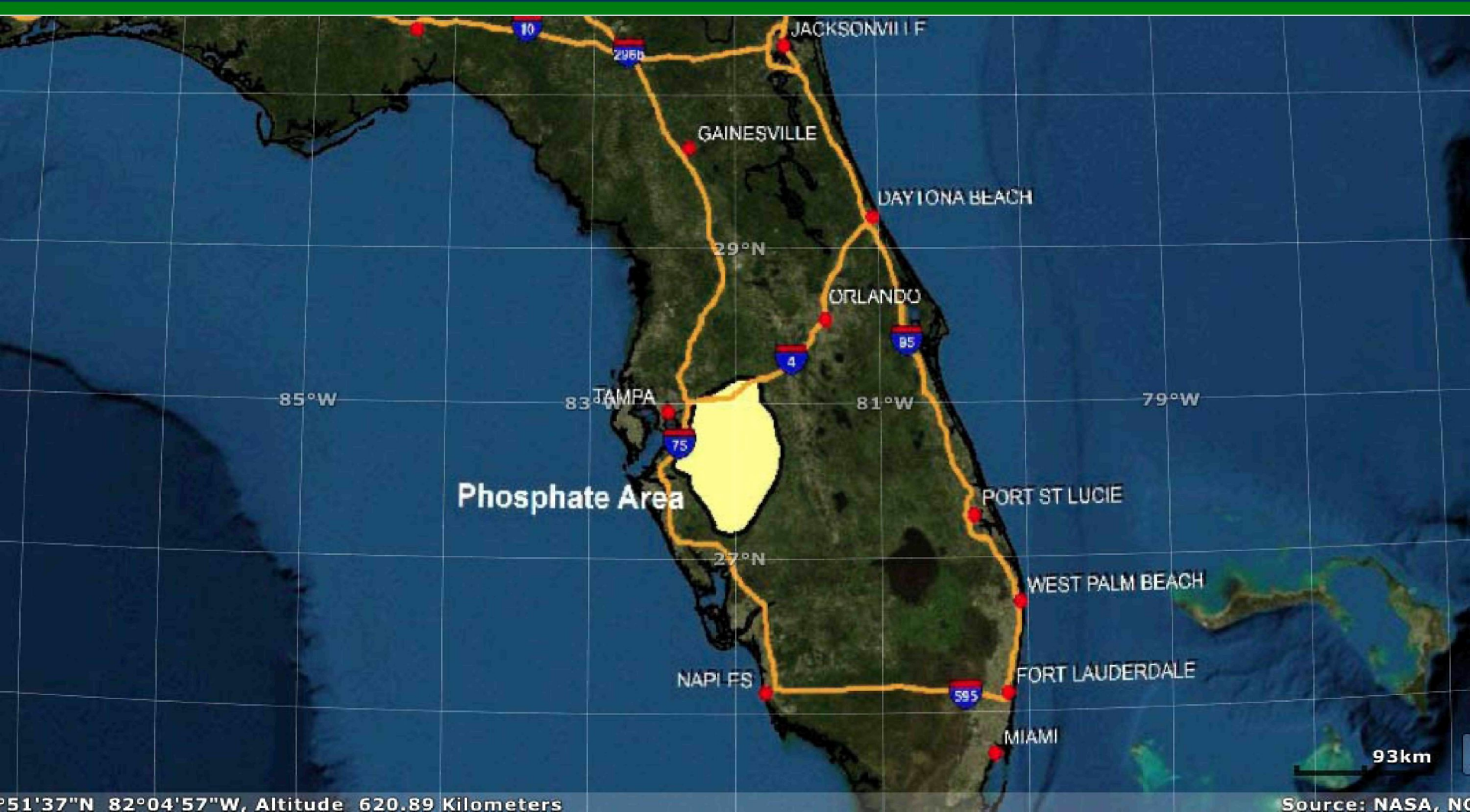
BRIEFING AGENDA

- Introduction
- R4 Work to Date and Future Plans
- Non-CERCLIS Phosphate Mining Sites
- Current CERCLA Approach
- Next Steps

BACKGROUND

- 2150 mi² phosphate deposit located in West-Central, Florida.
- Primary source of phosphate ore for U.S.
- Mining in Florida began in late-1800's.
- Ore contains natural levels of U²³⁸ and Ra²²⁶.
- Mining and processing distributes radionuclides at landsurface (e.g., TENORM).
- Elevated radiation levels may pose excess cancer risk in the range of 10⁻³ to 10⁻² (potential risks from bkg radiation 10⁻⁴).

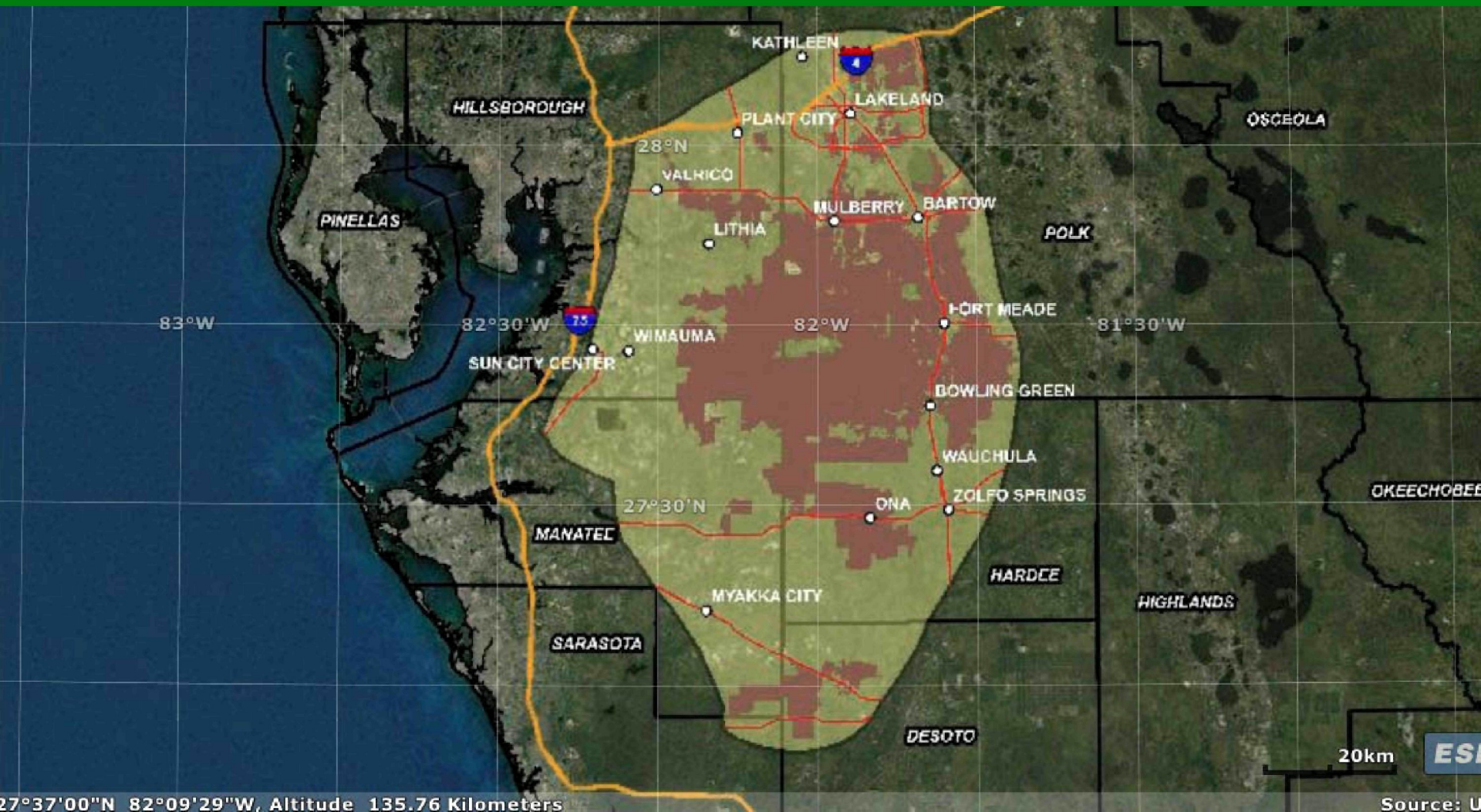
FLORIDA PHOSPHATE PROJECT LOCATION MAP



BACKGROUND (CONT.)

- 28 phosphate mining related sites in CERCLIS, spanning 337 mi² area.
- Represents about 40% of total phosphate mining related areas in Florida.
- Older mines have more residual ore (i.e., TENORM) and development.
- Two CERCLIS sites identified with residential areas (~900 homes).
- Residential use on “non-CERCLIS” phosphate mining sites ~7000 acres or ~28,000 homes.
- Extent of commercial/industrial and recreational development on formerly mined land unknown.

EXTENT OF ALL MINING



INTERACTION WITH HQ, STATE & ATSDR

- Multiple meetings among EPA, FDEP, FDOH, and ATSDR.
- Response Criteria Discussed:
 - EPA: Risk based (10^{-4}) and ARAR (5 pCi/g),
 - FDEP: No criteria for radiation or radionuclides in soil,
 - FDOH: 500 mRem/yr (NCRP recommendation),
 - ATSDR: 100 mRem/yr.
- Results documented in EPA and ATSDR “Concept Papers.”
- Agreement reached at August 2005 meeting with State and ATSDR for EPA to proceed with aerial survey of CERCLIS Sites using EPA criteria.
- OSRTI briefed at February 2008 meeting on plans to proceed with aerial survey of CERCLIS sites.
- Survey delayed pending approval.

CERCLA INVESTIGATIONS TO DATE

- Pre-Remedial work completed at phosphate mine-related CERCLIS sites by mid-1990's.
- ESI conducted at Tenoroc Mine site in 2000.
- RI/FS started at Coronet Mine Site in 2007.
- PRP searches initiated at Tenoroc Mine; Sydney Mine; and W.R. Grace/Bonnie Lake Mine sites.

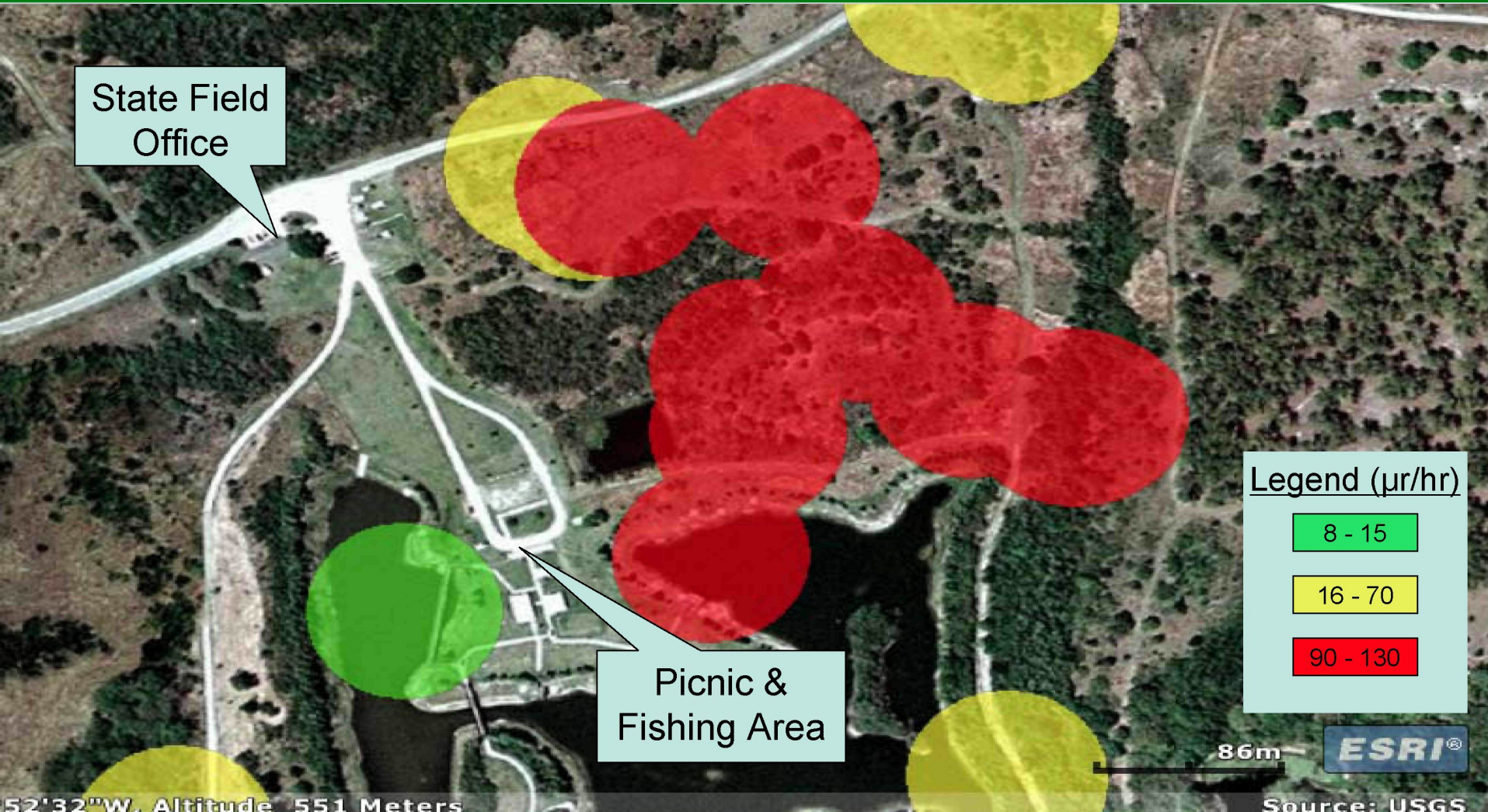
TENOROC MINE

- Gamma screening survey (conducted after chemical-based ESI) indicate elevated levels of radiation.
- Radiation data suggests potential risks to current State workers (5×10^{-3}) and recreational users (2×10^{-3}).
- Future resident exposure scenario estimated at 10^{-2} risk.
- Preliminary HRS Score (w/o radiation data) 70.

TENOROC MINE PRELIMINARY RADIATION SURVEY RESULTS



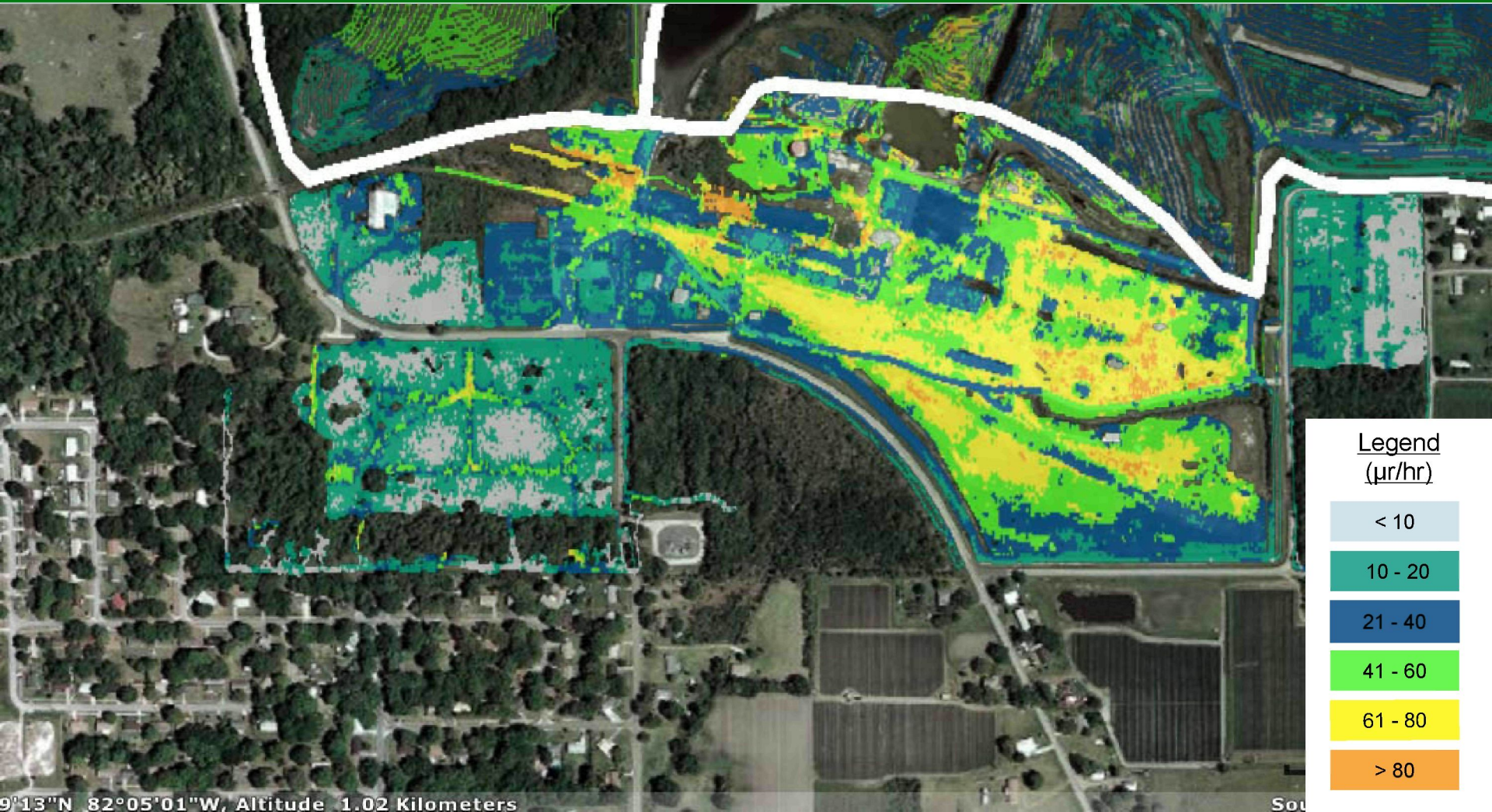
TENOROC MINE STATE OFFICE AND PICNIC/FISHING AREA



CORONET INDUSTRIES, INC

- Ground-based radiation survey conducted over accessible portions of 980-acre portion of Site.
- Results indicate elevated radiation levels over much of Coronet property.
- Concern for possible radiological impacts in adjacent residential areas.
- Background monitoring at Loyce E. Harpe Park (former mine area) indicated radiation levels ranging from 34 to 140 $\mu\text{r/hr}$. (No measurements at “care-taker” residence.)

CORONET RADIATION SURVEY RESULTS



CORONET AND POTENTIAL EJ COMMUNITY



BROADER CONCERNS

- Scope of potential impacts much broader than originally estimated.
- Data collected by EPA and State indicate formerly mined land developed for residential, commercial, or recreational use could have radiation levels that pose elevated risk.
- Current exposures exceed acceptable EPA and State risk levels.

RESIDENTIAL AREAS SURVEYED BY FDOH

Subdivision Name	Gamma Radiation Range ($\mu\text{r/hr}$)	Estimated Residential Risk
Floral Lakes	12 to 33 (indoor)	2×10^{-3} to 4×10^{-3}
Christina Woods	10 to 70	1×10^{-3} to 9×10^{-3}
Mission Oaks	45 to 50	6×10^{-3}
West Mulberry Heights	30 to 60	4×10^{-3} to 8×10^{-3}
Imperial Lakes	6 to 50	1×10^{-3} to 6×10^{-3}
Oaks School	30 to 100	4×10^{-3} to 1×10^{-2}

CURRENT CERCLA APPROACH

- Conduct assessments based on 10^{-4} risk level and UMTRCA ARAR (5 pCi/g above background).
- Address individual CERCLIS sites via standard CERCLA process.
- Proceed with enforcement-lead ESI/RI at Tenoroc Mine, Sydney Mine, and W.R. Grace Bonnie Lake Mine Sites.
- Proceed with development of Site Scoring Strategies of ESI/RI projects.
- Plan to conduct ESI/RI at 3 to 5 new phosphate mining site each year.
- Revise CI and Communication Strategy for Phosphate Project and prepare site-specific CI plans for ESI/RI projects.

NEXT STEPS

- Brief State and HQ on project status and future plans.
- Seek additional HQ funding for phosphate projects.
- Proceed with individual assessment work for phosphate mine-related CERCLIS sites.
- Proceed with radiological assessments to complete Coronet RI.
- Proceed with PRP search, enforcement-lead ESI/RI, and CI plan development at Tenoroc; Sydney; and W.R. Grace/Bonnie Lake mine sites.
- 3 to 5 new ESI/RI starts at phosphate mine-related CERCLIS site each year.

SUPPLEMENTAL SLIDES

RESULTS FROM PRELIMINARY PRP REVIEW

- **CURRENT MINING COMPANIES**

- CF INDUSTRIES (MID-WESTERN CO-OP)
- MOSAIC (FORMERLY CARGILL AND AGRICO)
- PCS PHOSPHATE (CANADIAN COMPANY)
- USAC (CHINA BASED COMPANY)

- **CERCLIS SITES CURRENT/PAST OWNERS/OPERATORS**

- AGRICO; WR GRACE; IMC; CARGILL; AMERICAN CYANIMID; KERR-MCGEE; SEMINOLE FERT.; AMAX; CORONET; BORDEN; FARM LAND IND; ESTECH; SWIFT AGRICULTURAL

- **CHRISTINA BLUFFS RESIDENTIAL AREA**

- W.R. GRACE ORGINAL OWNER
- MULTIPLE INDIVIUAL AND BUSINESS OWNERS
- CURRENTLY OWNED BY INDIVIDUAL RESIDENTS

RESULTS FROM PRELIMINARY PRP REVIEW (CONT.)

Company Name	CERCLIS Site	Residential Areas
Borden Chemical Co.	X	X
Cargill, Inc.	X	
CF Industries, Inc.	X	
Coronet Industries, Inc.	X	
Cytec Industries	X	
Estech, Inc.	X	
Exxon Mobile Corp	X	X
Farmland Industries	X	

RESULTS FROM PRELIMINARY PRP REVIEW

Company Name	CERCLIS Site	Residential Areas
Freeport-McMoran Copper & Gold, Inc.	X	
IMC Global, Inc.	X	X
Mosaic Phosphates Co.	X	
US Agri-Chemicals Corp.	X	
US Steel Corp	X	X
W.R. Grace & Co.	X	X
The Williams Companies	X	